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ABSTRACT

A study was designed to determine whether scores for general knowledge, specific knowledge, and general interest on a topic could be used as predictors of children's listening comprehension. Baseball and dolls were chosen as the topics because their stereotypic nature would allow the data to be generalized across the subject population. Data were collected on 27 first grade children during three sessions. Topical interests and general topical knowledge were measured during the first session, pretests on the specific stories during the second session, and comprehension posttests (after the stories were read aloud to the students) during the third session. Both general topical knowledge and specific topical knowledge of dolls significantly predicted doll story comprehension scores. In contrast, only general topical knowledge of baseball was significantly related to students' comprehension scores for the baseball story. High interest in a topic did not necessarily entail high general knowledge about the topic. Children's correct responses to story-specific questions about dolls and baseball significantly predicted doll story but not baseball story posttest scores. (RL)

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of Listening Comprehension

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Topical Knowledge and Topical Interest Predictors
of Listening Comprehension

This study was designed to determine whether preassessments of general and specific topical knowledge and topical interest ratings can predict children's listening comprehension.

Some research on this matter already exists. Langer (e.g., 1980, in press; Langer & Nicolich, 1980) showed that a qualitative free association measure of topical knowledge predicted children's recall and multiple-choice "wh" question performance. Hare (Note 1) additionally demonstrated that quantitative scoring of free associations predicted recall performance better than qualitative scoring. Free or word association measures are presumed valid because both the concept and the vocabulary knowledge revealed by such measures are implicated in comprehension. Nevertheless, free association is not typically employed in classroom settings for assessment or other purposes.

The topical knowledge measure which is probably most familiar to classroom teachers is informal unstructured questioning, which requires little action on the teacher's part other than that s/he converse with students about their experiences with the topic at hand. Teachers are commonly exhorted to raise students' schemata in this manner. Often, such directives are also implicitly contained in basal reader lessons, e.g.,

...Many people like to plan and build parks as Frederick (Olmsted) did. They also like to build houses, apartment buildings, and tall skyscrapers. Some like to build bridges that cross over rushing rivers. Have any of you ever built anything? (Many children will have had experience building sandcastles or snow forts, helping with treehouse construction, etc.) Let's read together the story of some of the builders of the earth... (Everetts & Weiss, 1977, p. T-69)

Unstructured questioning certainly suits the criterion of ecological validity;

however, Holmes and Roser (Note 2) found this measure to be the least efficacious for eliciting correct factual information.

Structured or direct questioning is another strategy teachers might easily use to elicit students' topical knowledge. Also to its credit, Holmes and Roser showed structured questioning was capable of eliciting many correct facts. Most important, Pearson, Hansen, and Gordon (1979) measured students' background knowledge via direct questioning and went on to demonstrate that students with much knowledge answered more explicit and more implicit comprehension questions correctly, though the effect was more marked for implicit questions.

Still another ecologically valid measure of topical knowledge might be profitably studied, that of multiple-choice recognition questioning, which Holmes and Roser showed also elicited many correct facts. Ergo, the current study featured the use of this topical knowledge measure for purposes of replicating previous results and validating another assessment tool.

We nested a secondary study within the larger study. Its purpose stemmed from Asher, Hymel, and Wigfield's (1978) suggestion that children they studied understood more of high-interest material than low-interest material because they were possibly more knowledgeable about the content. Accordingly, we wanted to investigate whether topical knowledge scores correlate positively with topical interest scores, and whether topical interest and topical knowledge predict comprehension independently of one another.

Method

Subjects

Twenty-seven first-grade children judged by their teacher to be of average academic ability participated in the study. (Achievement test scores were unobtainable for these students.) Students all attended a public

school in a large Midwestern city. Class membership was comprised of black, Hispanic, and white students. Nearly two-thirds (17) of the sample was female.

Materials

Materials were gathered and developed with first-graders' abilities and experiences in mind. Two topics were selected for generalizability purposes, baseball, a stereotypic boys' topic, and dolls, a stereotypic girls' topic. We deliberately chose these topics to see whether boys and girls would exhibit different patterns of knowledge and interest about these topics. For each topic, a book to be read aloud to children was chosen. For baseball, we found Play Ball, Amelia Bedelia (Parish, 1972); for dolls, we found The Best-Loved Doll (Caudill, 1962). Finding two books that were both stories, and matched on length and readability (grade two), restricted the selection pool to the point where we had to use a baseball story starring a female character.

For each of the two stories, two topical knowledge tests were written. One, a traditional comprehension pretest/posttest, doubled as a test of story-specific topical knowledge, and was comprised of ten multiple-choice questions. Five questions required factual recall; five required making inferences. The second test was composed of ten multiple-choice factual questions, written to test children's general knowledge of doll or baseball topical information. Baseball-knowledgeable adults suggested information from which the top ten-mentioned baseball items were selected and the questions written. Our adult population was hard put to come up with suggestions for doll items, however, and so we eventually turned to a 28-year veteran of Marshall Field's toy department in Chicago and toy personnel at Macy's and

Bloomington's in New York for ideas for ten questions about common doll knowledge.

One topical interest rating measure was produced, which embedded dolls and baseball in a list of ten topics. A question about each topic was set in the frame: "How would you feel about reading a story all about ____?" Each frame was succeeded by a series of five faces, ranging in expressions from a deep frown to a cheerful smile.

Copies of all measures were xeroxed for the children.

Procedure

Data collection was carried out over three sessions. Students displayed no confusion over any of the tasks. At the first session, children met with the examiner (Devine) individually in the hallway. Each child's interests were assessed by the examiner, who read the topical interest rating measure to him/her and allowed the child to mark the faces according to how s/he felt. Each child next responded to the ten general doll and the ten general baseball questions, before being thanked for his/her cooperation on that day.

At the second session a week later, the examiner gave the class as a whole the pretests on the specific stories that were to be later read aloud. Test questions were read aloud slowly at least twice, and students' answer sheets were checked throughout the testing session to make sure each question was answered. Baseball questions were answered before the mid-morning recess, and doll questions were answered after the recess.

Still a week later, at the third and final session, the examiner read Play Ball, Amelia Bedelia aloud to the class, after which she administered the comprehension posttest (same as pretest) in exactly the same way as the pretest was administered. After the mid-morning recess, the same procedure was repeated for The Best-Loved Doll.

Scoring

Data coding was straightforward. Each student received scores representing the number of correct items (0-10) on the story pre- and posttests, and general topical knowledge tests, for both doll and baseball topics, totaling six scores in all. Each student also received a topical interest rating from 1 (deep frown) to 5 (cheerful smile) for each of the two topics.

Results

Findings in part replicated previous studies' findings. Stepwise regression analyses were performed to fit equations which would explain the comprehension scores received by students. Specific (pretest) and general topical knowledge scores and topical interest scores were entered together into the analyses as potentially explanatory variables. Topical interest was shown to be a nonsignificant predictor of doll story comprehension. Both doll topical knowledge scores, however, significantly predicted doll story comprehension, according to the following regression equation which explained 54.37% of the variation in students' scores:

$$\text{Score}_{\text{doll}} = 1.76 + .55 \text{ TK}_{\text{specific}} + .36 \text{ TK}_{\text{general}}$$

(21.26)** (4.34)*

Numbers in parentheses represent F values. One asterisk indicates significance at the 10 percent level, and two asterisks indicate significance at the .1 percent level. Any student's doll comprehension score could be estimated by adding .55 for every correct specific topical knowledge item and .36 for every correct general topical knowledge item to the constant of 1.76.

While results of the replication effort were much as expected for the doll story, unpredicted results accrued for the baseball story. First, specific topical knowledge was eliminated as a nonsignificant predictor of

baseball story comprehension. Second, higher interest in the topic of baseball was associated with lower comprehension scores on the baseball story. The final form of the regression equation, which explained 31.94% of students' score variation, appeared as follows:

$$\text{Score}_{\text{baseball}} = 5.58 + .54 \text{ TK}_{\text{general}} - .57 \text{ TI}$$

(6.29)** (3.94)*

Here, one asterisk again indicates significance at the 10 percent level, two asterisks at the 2.5 percent level. Any student's baseball comprehension score could be estimated by adding .54 for every correct general topical knowledge item to and subtracting .36 for every topical interest point from the constant of 5.58. General topical knowledge, at least, was significantly related to students' comprehension scores on the baseball story.

Relative to the second purpose of this study, girls nearly unanimously ranked dolls high as a reading topic ($\bar{X}=4.76$, s.d.=.56), as boys unanimously ranked baseball high as a reading topic ($\bar{X}=4.70$, s.d.=.48). The spread of ratings was much greater for the alternative topic, baseball for girls ($\bar{X}=3.18$, s.d.=1.33), dolls for boys ($\bar{X}=2.60$, s.d.=1.70). Topical interest overall was significantly correlated with sex, both for dolls ($r=-.74$, $p=.000$) and for baseball ($r=.60$, $p=.000$).

High interest in a topic did not necessarily connote high general knowledge about the topic. Both girls and boys were surprisingly quite knowledgeable about dolls in general ($\bar{X}=8.71$, s.d.=1.31 for girls; $\bar{X}=8.20$, s.d.=1.32 for boys), although only girls showed great interest in the topic. Children's knowledgeability about baseball in general, albeit to a lesser extent than with dolls, also was indicated ($\bar{X}=6.88$, s.d.=1.62 for boys; $\bar{X}=6.70$, s.d.=1.89 for girls), in spite of boys' professed greater interest in

baseball. As boys and girls were equally knowledgeable about both topics, measures of topical knowledge did not correlate significantly with sex. (Correlation coefficients ranged from $-.18$ to $.05$, $p > .05$.) Neither the specific nor the general measure of topical knowledge correlated significantly with topical interest ($r = .10$, $p = .32$ for baseball; $r = .05$, $p = .40$ for dolls), as Asher et al. (1978) hinted might be the case. For that matter, the two topical knowledge measures failed to significantly correlate with one another ($r = .13$, $p = .26$ for baseball; $r = -.15$, $p = .23$ for dolls).

Discussion

Asking children general knowledge multiple-choice questions about dolls and baseball yielded information which significantly predicted children's comprehension of doll and baseball stories, respectively. This finding lends further support to a knowledge hypothesis (Anderson & Freebody, 1981) which views a general topical knowledge score as a reflection of the breadth and depth of knowledge about a topic, knowledge that may be critical to text understanding.

Children's correct responses to story-specific knowledge questions about dolls and baseball significantly predicted doll story, but not baseball story, posttest scores. In the course of seeking reasons for the latter wayward result, we asked a small sample of adults to answer our literal and inferential comprehension questions for each story, without reading or listening to the stories. Their answers confirmed our suspicion that whereas it was possible for listeners to answer all ten inferential questions on the basis of relying only on textual information, one of the baseball and all five of the doll questions could also be correctly answered by making pragmatic, logical inferences about human interactions and story plots. For instance, without knowing the actual story or even the possible answers

to the question, "What kind of a decision was it for Betsy to select one doll to take to the party?", one might naturally guess, "Hard", which happens to be the correct response. Answering "How did the boys on the Grizzly team feel while Amelia was playing?" is difficult, without knowing the actual story. Hence, fewer opportunities existed for students to use relevant scriptal knowledge to answer items correctly on the baseball story than on the doll story, thus decreasing the chances that baseball pretest scores would be associated with baseball posttest scores. (Mean pre- and posttest scores were lower for the baseball story than corresponding scores for the doll story.) Such an explanation would be in line with Pearson et al.'s (1979) finding of the greater salutary effect of prior knowledge on implicit question responses.

In this study, topical interest was unassociated with topical knowledge. For the most part, children knew a great deal about both dolls and baseball, independent of whether they were interested in reading about these topics. Questioning children after data collection demonstrated the positive effects of perhaps unintended but unavoidable experiences with dolls or baseball on children's topical knowledge. Those children who expressed the least interest in reading about baseball, all girls, nevertheless received considerable baseball information as a byproduct of living in a two-team town. All mentioned hearing about baseball in the news on television or in conversation. The mean general topical knowledge score of those who rated baseball least desirable as a reading topic was, in fact, higher than the mean score of those who rated baseball most desirable. In the case of baseball, then, high interest without sufficient knowledge produced lower comprehension scores than low interest accompanied by baseball knowledgeability.

Those children who expressed the least interest in reading about dolls,

all boys, scored exceptionally high on the doll general topical knowledge test. Questioning revealed these boys all had one or more sisters who had passed along knowledge about dolls to their unsuspecting brothers, simply by virtue of living closely together in the same household. Thus, perhaps those children who were uninterested in reading about dolls inadvertently knew as much about dolls as those who were very much interested in reading about dolls. Or, perhaps it is not unusual for first-grade boys to be knowledgeable about dolls.

Little interest in a given topic, therefore, does not necessarily imply little knowledge, nor need great interest necessarily be associated with great knowledge. Evidently, individuals' particular world circumstances sometimes do and sometimes do not contribute knowledge independent of stated interest in a topic, which is not a big surprise. And, in those cases where topical knowledge is inadequate, boosts from high topical interest to comprehension may be insignificant.

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